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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,324	12/14/2000	Mikko Antero Lipsanen	032986-011	9513

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EXAMINER	
SEFCHECK, GREGORY B	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/737,324	LIPSANEN, MIKKO ANTERO	
	Examiner	Art Unit	
	Gregory B Sefcheck	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed 6/25/2004 is acknowledged.
- Claim 38 is cancelled, Claims 20 and 28-35 are amended.
- The previous rejections under 35 USC 112, 2nd paragraph are withdrawn.
- Claims 20-37 are pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 20-23, 25, 26, and 28-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Kainulainen (US005796793A).

- In regards to Claims 20, 21, and 32-35,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization (Abstract; claim 20,32,33,34,35 – node synchronizing in a network, where a master node is coupled to a PRC and a plurality of slave nodes synchronize their internal clocks to the PRC using data received on incoming links).

Referring to Fig. 3, Kainulainen shows propagating synchronization messages through the network from the master node 1 to slave nodes 2-5. Kainulainen shows

that the propagation of the message is delayed so the slave nodes may adapt the message signature to incorporate its identify into the message (Col. 3-4, lines 55-59; claim 20,32,33,34,35 – propagating sync status messages through network from the master node through slave nodes, with each slave node incorporating its identify into the message as it propagates to generate a message path and propagating the message on to neighboring slave nodes).

In an ideally stable situation, Kainulainen discloses all nodes would be synchronized to the master node. Kainulainen shows that certain nodes may receive two or more incoming signals synchronized with the master code, so additional processing delay is required to select the signal based upon the one arriving over the shortest path (Col. 4, lines 37-43; claim 20,32,33,34 – introducing an additional delay in the propagation at certain nodes).

Kainulainen also shows incrementing a distance counter in the message when received by a slave node (Col. 4, lines 14 and 49; claim 34 – slave node increments a distance counter in the SSM).

Kainulainen shows that messages may be received on multiple incoming links, with the link having the shortest path messages being selected for synchronization (Col. 4, lines 21-40; claim 20,32,34,35 – registering a path length of a SSM received on an incoming link as an attribute for that link; claim 21 – selecting the incoming link having an attribute indicating the shortest path length from the master node as the link to synchronize on).

- In regards to Claim 22,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Referring to Figs. 2 and 3, Kainulainen shows that the message-based synchronization (Fig. 3) begins upon initialization of the network (Fig. 2; Col. 5, lines 35-57; claim 22 – propagating SSMs on initializing a new network).

- In regards to Claim 23,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Kainulainen shows that the nodes transmit sync messages in all directions to accommodate changes in the network (Col. 4-5, lines 60-25; claim 23 – sending SSMs at intervals to enable the network to cope with dynamic changes in network architecture).

- In regards to Claim 25,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Kainulainen shows that a node, upon accepting a message from one of its neighboring nodes, generates its own outgoing message with its unique signature incorporated into the message (Col. 4, lines 44-47; claim 25 – generating a SSM at a slave node in response to receipt of a SS request message from a neighbor slave node, with the SSM including identification of the path over which the sending slave node has been synchronized).

- In regards to Claim 26,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Kainulainen shows that a node transmits a sync message after incrementing a counter indicative of its distance from the master node (Col. 4, lines 14 and 49; claim 26 – a node which SSM passes adds its distance from the master node).

A node utilizes the distance information in the message of each incoming link to selects the link having the shortest path distance from the master node (Col. 4, lines 21-39; claim 26 – a node registers the distance as an attribute for each incoming link).

- In regards to Claims 28-31,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Kainulainen shows that the delay for propagation and selection of the sync messages is a preset time period (Col. 7, lines 60-63; claim 28 – additional delay introduced by a slave node is the same for all slave nodes that introduce delay).

Kainulainen also shows that the propagation of the sync messages may be delayed based on the distance and signature information contained within the received sync messages that are stored in a table in the node's memory (Col. 7-9, lines 60-55; claim 29 – additional delay increases with distance from the master node; claim 30 – additional delay to be introduced by a node is identified in the SSM; claim 31 – additional delay to be introduced by a node is defined by a delay table stored in the node).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kainulainen in view of Tikalsky (US005875179A).

- In regards to Claim 24,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Kainulainen does not explicitly show generating SSMs at the master node in response to a synchronization request from another node.

Tikalsky discloses a method for synchronizing nodes through sync messages derived from a single reference clock of a master node in a wireless network. Tikalsky shows that sync messages may be initiated by a request from another node (Col. 4, lines 57-65; claim 24 – SSMs are generated in response to receipt at the master node of a SS request message from another node).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the node synchronization of Kainulainen by generating sync messages in response to a request from another node. This modification would allow synchronization of new nodes that were not able to synchronize in a previous sync message exchange.

- In regards to Claim 27,

Kainulainen discloses synchronizing the slave nodes in a telecommunications system to a single master clock source utilizing a hierarchical message-based synchronization that covers all limitations of the parent claim.

Kainulainen does not explicitly show synchronization of nodes in a UMTS network.

Tikalsky discloses a method for synchronizing nodes through sync messages derived from a single reference clock of a master node in a wireless network (Title; claim 27 – network is a UMTS network).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the node synchronization of Kainulainen to a wireless network, such as a UMTS network, as taught by Tikalsky, thereby enabling node synchronization in the dynamically changing and reconfigurable environment of a wireless network.

5. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tikalsky in view of McCanne (US006611872B1).

- In regards to Claims 36 and 37,

Tikalsky discloses a method for synchronizing nodes through sync messages derived from a single reference clock of a master node in a wireless network (Title; Abstract; claim 36/37/38 - node synchronizing in a network, where a master node is

coupled to a PRC and a plurality of slave nodes synchronize their internal clocks to the PRC using data received on incoming links).

Tikalsky discloses sending a request for synchronization from a node to neighboring nodes (Col. 4-5, lines 57-7; Col. 11, lines 18-25; claim 36,37 – sending a SSM request from a node requesting to be synchronized to neighboring nodes in the network).

The new node synchronizes to the node on the incoming link that is the closest to the master node (Col. 5, lines 8-31; claim 36,37 – synchronizing the requesting node on the incoming link having the shorting path).

The new nodes may then transmit a sync message to its neighboring nodes that incorporates its distance from the master node (Col. 5, lines 1-17; claim 36,37 – extending the path of the message to include the identity of the requesting node; claim 36,37 – propagating the SSM having the extended path to at least one neighboring node).

Tikalsky shows that neighboring nodes transmit a sync message to their new node that includes an indication of its relative distance to the master node. However, Tikalsky does not show including the explicit path from the master node.

McCanne discloses a path state routing protocol in an overlay network. Each node in the network propagates messages to its neighboring nodes that include the entire path to which the route corresponds in order to avoid routing loops (Col. 18, lines 35-57; claim 36,37 – returning SSM from neighboring nodes to the requesting node, message including a path from the master node).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Tikalsky by including the explicit path from the master node in transmitted sync messages to neighboring nodes. This modification would continue to provide the relative distance to the master node shown by Tikalsky while also providing a way of detecting loops in the path to the master node.

Response to Arguments

6. Applicant's arguments filed 6/25/2004 regarding claims 20-35 have been fully considered but they are not persuasive.

- In the Remarks on pg. 9 of the Amendment, the Applicant contends that "Kainulainen appears to teach against imposing an additional delay into the synchronization process" aside from the inherent delay of processing the sync message propagation.
- The Examiner contends that Kainulainen discloses an additional delay in propagation of the messages at certain nodes. On lines 28-36 of column 4, Kainulainen shows that all nodes are continuously comparing incoming messages to select the best signal for synchronization, where the primary criterion for the selection is the SOMS address of a node appearing as the master node to the preceding nodes. However, on lines 37-43 of column 4, Kainulainen shows that certain nodes may receive two or more incoming

signals where the SOMS address appears as the master node to the preceding nodes, requiring further processing (and delay) for selecting the incoming signal arriving over the shortest path.

7. Applicant's arguments in the Remarks on pg. 10 of the Amendment, filed 6/25/2004, with respect to the rejections of claims 36 and 37 under 35 USC 102(b) as being anticipated by Tikalsky have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made under 35 USC 103 over Tikalsky in view of McCanne.

- The Examiner agrees with the Applicant's contention that "Tikalsky passes along the path depth as an integer" and that Tikalsky does not pass the actual communication path.
- The Examiner has found additional analogous prior art that shows passing of the actual communication path, as shown in the rejection above.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Feldman et al. (US006130889A) discloses determining and maintaining hop-count for switched networks
- Zaumen et al. (US005881243A) discloses a system for maintaining multiple loop free paths between source node and destination node in computer network

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory B Sefcheck whose telephone number is 571-272-3098. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on 571-272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GBS
9-21-2004

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